

A CONTRIBUTION TO NORTH AMERICAN DIPTEROLOGY.

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In the following paper are included the descriptions of several new species of North American Tachinidæ and Syrphidæ; also a summary of the North American representatives of the genus *Hyperecteina* Schiner. I am under obligations to Mr. Frederick Knab and Mr. C. W. Johnson, each of whom very kindly offered much valuable advice and criticism; also to Dr. L. O. Howard, who made possible my opportunity to examine many of the types for comparison.

FAMILY SYRPHIDÆ.

Helophilus willingii, new species.

Eyes and arista bare; third antennal joint oval; head, thorax, abdomen and legs shining black in ground color. Length 11 to 12 mm.

Male and Female.—Front in the male about one-half as wide as, in the female nearly as wide as either eye; in the male pile on the upper half of the front black, on the lower half grayish white; in the female black pile on the front, descending a little below the upper half; vertex shining black, very thinly dusted gray pollinose; face on the lower half produced obtusely downward and forward into a cone, shining black, densely grayish-white pollinose on the sides and bearing pile of a similar color along the margins of the eyes; beneath the antennæ concave for a short distance and then nearly straight to the tip; in the middle of the face extending from the tip of the epistoma nearly to the base of the antennæ a moderately broad shining black stripe; epistoma on the ventrad shining black; cheeks below the eyes narrow, dull black, grayish pilose; first two joints of antennæ shining black; the third joint brownish black, dusted gray pollinose; shining brownish black just above the base of the antennæ; arista brown; thorax shining black, the usual lateral stripes rather indistinct gray; in the female two velvety black spots at the tip of each mesothoracic suture; pile of mesonotum grayish; scutellum shining black, gray pilose; pleuræ also shining black and densely grayish pilose; abdomen oval, shorter than the wings, wholly shining black, sparsely grayish pilose, except the dorsad of segment 3 and the basal margin of segment 4, which are mostly covered with very short black pile; legs shining black, the tip of femora and the base of tibiæ faintly brownish; pile in most reflections grayish and black; on the tarsi ochraceous in some reflections; pulvilli and the tarsal claws on the basal two-thirds yellowish; tips of the tarsal claws black; wings in the male subhyaline; in the female slightly smoky tinged; the veins and stigma brownish; sixth longitudinal vein gently curved; calypteres whitish.

Described from 1 male collected June 19, 1905, and 1 female collected July 8, 1906; both from Regina, in the Saskatchewan region, Canada; both specimens collected by Mr. T. N. Willing, after whom the species is named.

Type: No. 14695, U. S. National Museum.

Chalcomyia cyaneus, new species.

Dark metallic blue, shining, very sparsely clothed with short grayish pile; eyes and arista bare; dichoptic species. Length 7 to 8 mm.

Male.—Eyes moderately separated; front metallic bluish black, shining, sparsely grayish pilose on the vertex, a narrow obsolete cross-band near the middle; antennæ situated upon a strong conical projection, the first two joints short, the first joint blackish, the second and third light brownish; the third joint orbicular; arista basal, bare, dark brown; margin of the antennal process at base of antennæ reddish brown; face below the antennal process concave, very moderately tubercular near the middle, produced a little below the eyes; middle of the face, epistoma on the under sides, and the cheeks shining metallic blue; a grayish white pollinose stripe runs from the eyes obliquely to the oral margin; the mesonotum, scutellum, and the pleuræ shining metallic blue, very sparsely gray pilose; scutellum moderately large and projecting, the outer angles rounded, faintly shallow grooved on the disk; abdomen oval in outline, somewhat flattened, shining metallic blue, very short grayish pilose, longer on the lateral margins in front; legs rather stout, dark brownish black, shining; extreme tip of femora and base of tibiæ reddish brown; hind femora moderately thickened; pile on the under sides of hind tarsi golden in some reflections; wings subhyaline, faintly yellowish tinged, the third and sixth longitudinal veins nearly straight, anterior cross-vein oblique, situated before the middle of the discal cell; subcostal cell from slightly before the tip of the auxiliary vein to the costa yellow; calypteres white.

Described from two male specimens taken at Franconia, New Hampshire, by Mrs. A. T. Slosson.

Type: No. 14696, U. S. National Museum.

FAMILY TACHINIDÆ.

Phorocera einaris, new species.

Thorax, legs and abdomen black, dusted with pollen. Length, 11 to 14 mm.

Eyes densely pilose; front in the male about two-thirds, in the female about five-sixths as wide as either eye; frontalia opaque black; parafrontals densely yellowish gray pollinose; the parafacials, cheeks, and occiput densely dusted gray pollinose, sometimes nearly all the pollen of the head is faintly tinged with yellow; front in the male projecting about two-thirds, in the female about one-half the horizontal diameter of the eye as viewed from the side; frontal bristles descending to or slightly below the apex of

the second antennal joint, the 3 uppermost frontal bristles in the male stout, recurved, and of equal length, in the female the penultimate bristle is only two-thirds the length of the other two; frontal bristles below the base of the antennæ curving upwardly; parafrontals outside of the frontal row covered with many black hairs, 2 pairs of strong proclinate orbital bristles present in the female; ocellar bristles long, proclinate; vibrissæ on a level with the front edge of the oral margin; facial ridges ciliate on the lowest two-thirds to four-fifths, the bristles long, reclinate; antennæ black, dusted grayish white pollinose; the third joint in both sexes at least four times as long as the second, its greatest width equal to the length of the second antennal joint; arista one and one-half times as long as the third antennal joint, thickened on the basal one-fifth to one-fourth, the penultimate joint longer than broad; cheeks caudad of the vibrissæ each bearing a row of black macrochaetæ near the oral margin, the remainder covered with many black hairs, about one-fifth as broad as the eye height; sides of face each one-fifth as wide as the median depression; palpi reddish yellow, robust, and slightly spatulate.

Mesonotum black, appearing when viewed from behind densely yellowish-gray pollinose, the pollen appearing at its greatest density along the anterior margin and upon the humeri, distinctly vittate; four pairs of post-sutural and three pairs of postacrostichal bristles; pleura dusted gray pollinose; two sternopleural bristles; scutellum brownish on the apical half, dusted with pollen, bearing a strong pair of discal macrochaetæ and four pairs of long marginals, the apical pair cruciate; legs shining black, gray pollinose; the middle tibiæ each bearing two macrochaetæ on the front side near the middle; hind tibiæ ciliate or subciliate; tarsal claws and pulvill-elongate in the male, short in the female.

First abdominal segment black; the second and third segments grayish-white pollinose on the anterior two-thirds, the posterior third shining black; the fourth segment shining black except on the sides, which are densely gray pollinose; first and second segments each bearing a pair of marginal macrochaetæ; the third a marginal row and the fourth a discal and marginal row and many shorter bristles intermingled on the apical two-thirds; along the ventral median of the female a row of black macrochaetæ.

Wings hyaline, faintly tinged with yellow at the base and along the costa; the third vein usually bristly one-half to two-thirds the distance from the base to the small cross-vein; the fourth vein beyond the bend concave; the small cross-vein distinctly before the middle of the discal cell; posterior cross-vein sinuous; calypteres whitish, faintly bordered with yellow.

This species differs from *Phorocera tortricis* Coq. as follows: *P. tortricis* is a smaller species, the hairs of the abdomen are suberect, and the third vein bears only two bristles at its base; none of these characters are true of *P. cinaris*. *P. cinaris*

differs from *Phorocera claripennis* Macq., which it closely resembles in appearance, as follows:

<i>P. einaris.</i>	<i>P. claripennis.</i>
Bend of fourth vein not distinctly long appendiculate. Scutellum bearing a strong pair of discal macrochaetæ.	Bend of fourth vein distinctly long appendiculate. Scutellum usually not bearing a pair of discal macrochaetæ.
Middle tibiæ each bearing two macrochaetæ on the front side near the middle.	Middle tibiæ each usually bearing three macrochaetæ on the front side near the middle.
Two sternopleural macrochaetæ. Arista thickened on the basal fifth to one-fourth.	Three sternopleural macrochaetæ. Arista usually thickened on the basal half.

Described from 5 males and 4 females collected at Melrose Highlands, Massachusetts, August 1 to September 20, 1911, by the author and F. H. Mosher; 1 female from Lynn, Massachusetts, August 29, collected by F. W. Lowe; 1 female from New Haven, Connecticut, collected by W. E. Britton, August 14, 1906; and 1 female from Tampico, Mexico, taken by E. A. Schwarz.

Type: No. 14697, U. S. National Museum.

Phorocera incrassatus, new species.

Thorax and abdomen black, polished; scutellum brownish yellow on the apical two-thirds; legs brownish black, all thinly dusted gray pollinose; palpi yellow.

Length, 7 mm.

Head nearly one and one-half times as broad as long; front as wide as either eye; parafrontals, parafacials, and the cheeks yellowish-gray pollinose; frontal bristles descending to a point opposite the arista; outside of the frontal row a pair of proclinate orbital bristles and a number of black bristles and bristly hairs; frontalia opaque brown; antennæ black, dusted with whitish pollen, descending nearly to the oral margin, the third joint at least three and one-half times as long as the second; arista one and one-fourth times as long as the third antennal joint, thickened on the basal half, the penultimate joint only slightly longer than broad; vibrissæ on a level with the front edge of the oral margin; facial ridges ciliate on the lower half; sides of face each one-fifth as wide as the median depression; width of cheeks equal to about one-fifth the eye height; cheeks caudad of the vibrissæ, each bearing a row of strong bristles near the oral margin, the remainder bearing many black bristly hairs; palpi about as long as the proboscis.

Mesonotum black, polished, dusted yellowish-gray pollinose, distinctly vittate; four pairs of postsutural and three pairs of postacrostichal

bristles; pleuræ dusted grayish; three sternopleural bristles; scutellum pollinose, bearing three pairs of long marginal and a short apical pair of macrochaetæ; bristles and bristly hairs of scutellum erect; legs brownish black, thinly dusted grayish; front tarsi moderately dilated; middle tibiæ each bearing two macrochaetæ on the front side near the middle; hind tibiæ subciliate; calypteres tinged with yellow; wings hyaline, faintly tinged with yellow at the base and along the costa; the third vein bearing two or three bristles at its base; the small cross-vein distinctly before the middle of the discal cell; posterior cross-vein sinuous; bend of fourth vein not appendiculate; apical cell open.

Abdomen shining metallic black; dorsally, the first segment black; the remaining segments dusted yellowish-gray pollinose, the pollen appearing more dense on the sides and the basal margins of the segments; first segment bearing a pair of marginal macrochaetæ, the second two pairs of discals and one pair of marginals; the third two pairs of discals and a marginal row and the fourth segment bearing macrochaetæ on its apical two-thirds; hairs of abdomen depressed.

This species is very distinct from the other species of *Phorocera*; the general shape of the abdomen superficially resembles that of typical *Carcelia blanda* O. S.

Described from one female specimen taken at Moscow, Idaho.

Type: No. 14698, U. S. National Museum.

HYPERECTEINA Schiner.

The writer having experienced considerable difficulty in satisfactorily determining several specimens of this genus by the aid of Coquillett's "Revision of the Tachinidæ North of Mexico," and his later descriptions of members of this genus, recently had the good fortune to examine in the U. S. National Museum all of the representatives, including many of the types of this genus, described from America north of Mexico. As a result of this study it was possible to arrange what is hoped will serve as a satisfactory key to the described representatives of this genus in America north of Mexico.

Bezzi and Stein, in their "Katalog der Paläarktischen Dipteren," recognize the genus *Admontia*, described by Brauer and Bergenstamm in 1889 with *Degeeria amica* Meig. (as *podomyia*, new species) as the type of the genus. They have placed *Hyperecteina* Schiner in the synonymy. The genus *Hyperecteina* was described by Schiner in 1861; as it is not preoccupied, just how they arrived at this conclusion is somewhat of a mystery, as they include in the genus *Admontia* the species *metopina*, the type species of *Hyperecteina*, so designated by Schiner himself. In other words, they have entirely overlooked the fact that Schiner described the genus *Hyperecteina* with

metopina, a new species described by himself as the type some twenty-eight years before Brauer and Bergenstamm designated *Degeeria amica* Meigen as the type of their genus *Admontia*. *Degeeria amica* Meigen, therefore, becomes merely *Hyperecteina amica* Meigen. Mr. Coquillett has pointed out this fact in his paper, "The Type-species of the North American Genera of Diptera."

The representatives of the genus in America north of Mexico may be separated as follows:

1. The third abdominal segment in the female at most only normally carinate on the venter 2
 The third abdominal segment in the female abnormally carinate on the venter, the carina forming a wide lateral ridge and thickly beset with short black spines; front in the male two-thirds as wide as, in the female as wide as either eye; bristly hairs on the sides of the face not arranged in a single row; the third antennal joint in both sexes nearly twice as long as the second; arista thickened on the basal third, the penultimate joint broader than long; sides of face each nearly one-half as wide as the median depression; cheeks one-fourth as broad as the eye-height; facial ridges bristly on the lowest one-fourth to two-thirds; abdomen gray pruinose on the basal margins of the last three segments; bearing both discal and marginal macrochaetæ; three sternopleural macrochaetæ; the third vein bearing two or three bristles at its base. Length, 6 to 9 mm. 3 males and 5 females bred from *Hylotoma humeralis* Beauv. Type 4061, U. S. Nat. Mus. (Can. Ent. Vol. xxx, p. 233.)
hylotoma Coq.
2. Third vein bristly less than one-half the distance from base to the small cross-vein 3
 Third vein bristly at least two-thirds the distance from base to the small cross-vein; front in the female four-fifths as wide as either eye; parafrontals and the parafacials grayish white pollinose; sides of face each one-fifth as wide as the median depression; frontal bristles descending to the lower end of the eye; one bristle on the facial ridge above each vibrissa; first two joints of antennæ and the palpi yellow; arista thickened on the basal third; penultimate joint as broad as long; thorax thinly dusted grayish-white pollinose; scutellum bearing three pairs of long marginal macrochaetæ; three sternopleural macrochaetæ; middle tibiæ each bearing a single macrochaeta on the front side near the middle. One female from San Mateo County, California. Type, 7671 U. S. National Museum. (Invertebrata Pacifica, I, Feb. 10, 1904.) *setigera* Coq.

3. Palpi yellow 5
 Palpi black; three sternopleural macrochaetæ; bristly hairs
 or macrochaetæ on sides of face not arranged in a single row 4
4. Front in the male one and one-third times as wide as, in the
 female one and three-fourths to two times as wide as either
 eye; parafacials yellowish-gray pollinose; sides of face each
 one-third as wide as the median depression; usually three
 pairs of frontal bristles descending below base of the
 antennæ; the third antennal joint six to seven times as
 long as the second; arista thickened on basal three-fifths,
 penultimate joint at least twice as long as broad; facial
 ridges bristly on lowest two-thirds; thorax thinly dusted
 gray pollinose; scutellum bearing three pairs of long margi-
 nal macrochaetæ and a short apical pair; middle tibiæ
 each bearing a single macrochaeta on the front side near
 the middle; abdomen with thinly dusted grayish-white
 pruinose bands on the basal margins of the last three seg-
 ments; first segment bearing a pair of marginal macro-
 chaetæ; the others bearing both discal and marginal
 macrochaetæ; wings hyaline; third vein bearing two to
 four bristles at its base. Length, 5 to 8 mm. 4 females
 from Washington, D. C., and Beverly, Massachusetts.
 (Journ. N. Y. Ent. Soc., vol. III, p. 58; June, 1895.) *bergandei* Coq.
- Front in the male four-fifths as wide as either eye; parafacials
 grayish-white pollinose; parafrontals shining black; cheeks
 nearly one-third as broad as the eye-height; third antennal
 joint three and one-half times as long as the second; arista
 slightly pubescent at the base, thickened on the basal
 two-fifths; penultimate joint longer than broad; thorax
 grayish-white pollinose; scutellum bearing three pairs of
 long marginal macrochaetæ; the middle tibiæ each bearing
 two macrochaetæ on the front side near the middle; the
 first abdominal segment black; the remaining segments
 with grayish-white pruinose bands on the basal margins;
 abdomen bearing both discal and marginal macrochaetæ;
 wings smoky tinged except along the hind margins; third
 vein bearing from one to three bristles at its base; apical
 cell closed in the margin of the wing, sometimes short
 petiolate. Length, 5 to 7 mm. 6 males from Moscow and
 Juliaetta, Idaho. Type: 6202 U. S. National Museum.
 (Proc. U. S. N. M., xxv, p. 105.) *limata* Coq.
5. With three sternopleural macrochaetæ 9
 With two sternopleural macrochaetæ, middle tibiæ each bearing
 a single macrochaeta on the front side near the middle;
 scutellum bearing a weak apical pair of macrochaetæ;
 abdominal segments except the first gray pruinose on the
 basal margins 6

6. Wings hyaline, or sometimes smoky costally..... 7
 Wings subhyaline to small cross-vein, the remainder brown except the hind margin; front in the female one and one-fourth times as wide as either eye; parafrontals, parafacials, and the cheeks yellowish-gray pollinose; sides of face each one-third as wide as the median depression; bristly hairs on the sides of face not arranged in a single row; facial ridges bristly on the lowest two-fifths to three-fifths, third antennal joint in the female five to seven times as long as the second; arista thickened on the basal half, the penultimate joint twice as long as broad; thorax dusted yellowish-gray pollinose; the first abdominal segment bearing a pair of marginal macrochaetæ; the others bearing both discal and marginal macrochaetæ; hairs of abdomen long and depressed; the third vein bearing a single bristle at its base. Length, 7 mm. 2 females from Algonquin, Illinois, and National Park, New Jersey. Type: 3538, U. S. National Museum. (Journ. N. Y. Ent. Soc., vol. III, p. 55, June, 1895)..... *nasoni* Coq.
7. Abdomen bearing discal macrochaetæ; the third vein bearing more than one bristle at its base 8
 Abdomen not bearing discal macrochaetæ; the third vein bearing a single bristle at its base; front in both sexes slightly wider than either eye; frontal bristles descending scarcely below base of second antennal joint; sides of face each one-fifth as wide as the median depression; facial ridges bristly on the lowest fourth; parafrontals and the parafacials grayish-white pollinose; the first two antennal joints yellow; the third joint three to four times as long as the second; thorax grayish-white pollinose; apical cell usually closed in the margin of the wing. Length 7 mm. One male and 5 females from Opelousas, Louisiana. Type, 4062 U. S. National Museum. (Can. Ent., vol. XXX, p. 234.)..... *unispinosa* Coq.
8. Antennæ black; front in the male as wide as, in the female one and one-fourth times as wide as either eye; parafrontals and the parafacials grayish white pollinose; cheeks nearly one-half as wide as the eye height; facial ridges bristly on the lowest one-third; the third antennal joint at least four times as long as the second; arista thickened on the basal two-fifths; penultimate joint usually twice as long as broad; orbital bristles present in both sexes; thorax gray pollinose. Length, 5 to 6 mm. 2 males and 2 females from District of Columbia and Beverly and Dorchester, Massachusetts. (Jour. N. Y. Ent. Soc., vol. III, p. 58, June, 1895. *Hypostena*) *degerioides* Coq

Antennæ yellow, except at tip of the third antennal joint; front in the female as wide or slightly wider than either eye; one or two pairs of frontal bristles descending below the base of antennæ; sides of face each one-fifth as wide as the median depression; the facial ridges bristly on the lowest half; the third antennal joint five times as long as the second; arista thickened at least on the basal two-fifths; penultimate joint usually longer than broad; thorax dusted yellowish-gray pollinose; wings subhyaline, slightly smoky tinged costally; apical cell open, the third vein bearing two or three bristles at its base. Length, 6 to 9 mm. Four females from Opelousas, Louisiana, May, 1897, and Germantown, Pennsylvania. Type, 4063, U. S. National Museum. (Can. Ent., vol. XXX, p. 234.) *tarsalis* Coq.

9. Legs black; bristly hairs or macrochaetæ on the sides of the face arranged in a single row 10

Legs yellow; bristly hairs or macrochaetæ on the sides of the face not arranged in a single row; the tip of proboscis, the sides of the first two abdominal segments, and usually the apex of the abdomen yellow; front in the male one-third to one-half as wide as, in the female as wide as either eye; parafrontals, parafacials, and the cheeks yellowish-gray pollinose; three or four pairs of frontal bristles descending below the base of the antennæ; facial ridges bristly on the lowest third; third antennal joint in both sexes two to two and one-half times as long as the second; arista thickened on the basal two-fifths, the penultimate joint as broad as long; thorax gray pollinose; scutellum bearing three pairs of long marginal and a short apical pair of macrochaetæ; middle tibiæ each bearing a single macrochaeta on the front side near the middle; abdomen grayish pollinose; moderately carinate on the venter; bearing both discal and marginal macrochaetæ; wings hyaline; apical cell open; the third vein bearing two bristles at its base. Length, 8 to 10 mm. 3 males and 1 female from Washington, D. C. (List Dipt. Insects, part IV, p. 779, 1849, *Tachina*) : *demytus* Walk.

10. Middle tibiæ each bearing a single macrochaeta on the front side near the middle; front in the male as wide as, in the female one and one-fifth times as wide as either eye; cheeks one-third as broad as the eye height; sides of face each one-fifth as wide as the median depression; facial ridges bristly on the lowest fourth; parafrontals and parafacials grayish-white pollinose; the third antennal joint four times as long as the second; arista thickened on the basal third, penultimate joint as broad as long; thorax gray

pollinose; scutellum bearing a short apical pair of macrochaetæ besides the long marginals; abdomen grayish pollinose; first segment bearing a pair of marginal macrochaetæ; the others bearing both marginal and discal macrochaetæ. 1 male and 1 female specimen bred from chrysalids of *Retinia* sp. Type, 3532, U. S. National Museum. (Revis. Tachin., p. 54.) *retinæ* Coq.

Middle tibiæ each bearing two macrochaetæ on the front side near the middle; front in both sexes about two-thirds as wide as either eye; cheeks one-half as broad as the eye height; facial ridges at most bearing one or two bristles above the vibrissæ; parafontals shining black, thinly dusted gray pollinose near the base of the antennæ; the third antennal joint in both sexes at least four times as long as the second; first two joints of the antennæ and the tip of the proboscis yellow; arista somewhat pubescent on the basal half, thickened on the basal fourth, penultimate joint longer than broad; orbital bristles present in both sexes; thorax gray pollinose; scutellum bearing three pairs of long marginal macrochaetæ; abdomen with grayish white pruinose bands on the basal margins of segments two and three; sometimes carinate on the venter; usually no discal macrochaetæ present; (2 females have a weak pair of discals on segments 2 and 3); wings slightly smoky tinged costally; third vein bearing two to four bristles at its base; apical cell closed or open in the margin of the wing. Length, 5 to 7 mm. 1 male and 5 females from Oswego, New York. Type, 4064, U. S. National Museum. (Can. Ent., vol. XXX, p. 234) . . . *polita* Coq.